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ABSTRACT

Educators are becoming increasingly concerned with social psychological variables affecting classroom behavior. This study attempts to determine if the achievement attribution model is supported in an actual classroom setting with college students actually taking an important exam. Participants were 35 volunteers from an introductory social psychology course. Three short questionnaires were completed: one pre-test, one post-test but before the student knew the test score, and the third after the individual test scores and class distribution of scores were returned. The students did slightly worse than they expected or wanted to do. The majority attributed the cause of their exam outcome to effort. The results gave only limited support for the attribution model of expectancy changes being mediated by the stability of the causal attribution. Affect and self-reward were positively correlated with effort and ability ratings. Contrary to prediction, the highest correlations were not for the intentional effort attribution but rather for ability. Affect and self-reward were more related to subjective appraisals of success than objective performance. The results showed that the theoretical attribution model was generally supported, but suggested a far more complex model of attributions in the classroom than originally expected. (Author/JL)

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STUDENT ATTRIBUTIONS AND THE ATTRIBUTION MODEL DURING AN ACTUAL EXAMINATION

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Educators are becoming increasingly concerned with social psychological variables which affect classroom behavior. One set of such variables with great potential relevance for understanding student behavior is the beliefs students have about why they succeed or fail on a particular task. Research attempting to understand the attributions people make about the causes of their successes and failures has indicated that these causal attributions are important in predicting one's reactions to a particular situation (e.g., Weiner, Frieze, Kukla, Reed, Rest, & Rosenbaum, 1971).

Although it is generally assumed that the attribution process operates in most, if not all, real life situations, most of the supportive research for the achievement attribution model has been based on laboratory studies where success or failure occurs in an artificial situation or a relatively unimportant task. Additionally, only small portions of the models are tested at any one study (see Frieze, Note 1). If this model is to have predictive validity in actual classroom settings, it must be directly tested in these situations. The present study was done with college students who were actually taking an important examination to see if the attribution model was supported in an actual classroom setting.

THE THEORETICAL ATTRIBUTION PROCESS FOR ACHIEVEMENT EVENTS

Research into various aspects of the attribution process has been increasingly active over the last ten years. Based on a variety of studies dealing with how people utilize information in making causal judgments of all types and the consequences of various attributions, psychologists now understand a good deal about causal attributions. Most theorists would agree that making a causal attribution is basically an infor-

mation processing task. A person determines why a particular event occurred through assessing the available information about the person and the situation and combining this in some relatively systematic manner on the basis of past experiences and internal biases (e.g., Carroll, Payne, Frieze & Girard, Note 2; Frieze, 1976 a; Heider, 1958; Kelley, 1971; Shaver, 1975; Weiner, 1972).

On the basis of empirical findings as well as upon some speculation, the achievement attribution process has generally been conceptualized as shown in the schematic model labeled Figure 1 (Frieze, 1975). Although the model is intended as a circular, continuous process, for ease of explanation, the boxes in the figure are numbered. Within the attribution model, it is assumed that a person first determines whether the results of an achievement activity (such as an examination) were a success or failure (Box 1). Often this is manipulated directly in laboratory experiments and subjects are told whether they succeeded or failed, then relevant information about the exam (or other achievement activity) and the circumstances surrounding it are assessed to form a causal explanation about why this success or failure occurred (Boxes 2 and 3). These causal attributions have consequences for future expectancies (Box 4) and affect (Box 5). These then determine whether new achievement behaviors will occur (Box 7) along with the overall societal support for achievement (Box 6).

Causal Attributions

Returning to the example of the person taking an exam, once all available information is processed, a person might then determine that the success on the exam was due to one or more of several possible causes: the person's ability in that subject, her trying hard, the exam's being easy, or good luck. Similarly, if he had failed, it

might be attributed to lack of ability, lack of effort, the difficulty of the exam, or bad luck. These four causes were specified by Heider (1958) and have been most fully researched by Weiner and associates (e.g., Weiner et al., 1971; Weiner, 1974). More recent work (Elig & Frieze, 1975; Frieze, 1976 b) has indicated that other causal factors in addition to ability, effort, luck and task difficulty are frequently employed by people in explaining achievement success and failure. These include stable effort or a consistent pattern of diligence or laziness, other people who may aid or interfere with performance on a task, mood or fatigue or sickness, having a good or bad personality, and physical appearance (see Elig and Frieze for a more complete discussion of these causal elements). These attributions may be classified into three dimensions as shown in Table 1. Each of these dimensions (internality, stability and intentionality) has different relationships to the attributional consequences represented by Boxes 4 and 5.

Insert Table 1 about here

The first dimension, internality, has to do with whether the cause of an event is associated with the primary actor in the situation, and is thus internal, or whether the cause is external to this person. Thus a person may succeed on an exam because of the internal causes of ability, effort, mood, personality or knowledge. He may also succeed because of external factors: the ease of the task, someone else's help, or good luck. Related to this dimension and sometimes confused with it is the third dimension of intentionality. If the actor has control over the internal cause it is intentional (see Elig & Frieze, 1975). Thus, effort is internal and intentional while ability and personality are unintentional, although still internal. External causes can be intentional

if they involve another person who controls them. If someone else aids the actor, this would be an external, intentional cause.

Another dimension which is extremely important for classifying causal attributions is stability. Ability, personality and unchanging environmental factors are stable and change relatively little over time. Effort, mood and luck are unstable. They are highly changeable. Stability involves a relatively unchanging cause during the time period and across the situations one wishes to generalize to. Thus, the task may be stable or unstable depending on whether the task will change in the future (Valle & Frieze, 1976; Weiner, Russell & Lerman, in press). Other causes may also be reclassified within the dimensions depending on the specific situation (Elig & Frieze, 1975; Weiner et al., in press).

Consequences of Attributions

Expectancies. As seen in Figure 1, once the attribution of the event is made, certain consequences follow (Boxes 4 and 5). If a student failing an exam believes his poor performance is due to lack of effort, he may expect to succeed in the future if he tries harder. If, on the other hand, the failure is attributed to lack of ability, he will expect to do just as poorly in the future. Weiner et al. (1971) have systematically shown how changes in expectancies for future success on achievement tasks (Box 4) are affected by differential attributions. Several studies (e.g., Weiner, Nierenberg, & Goldstein, 1976; McMahan, 1973; Valle & Frieze, 1976) have empirically shown that expectancy changes are related to the stability dimension of causality. Stable causes produce expectancies that outcomes will continue to be the same, while unstable causes at times produce unusual expectancy shifts such as the Gambler's Fallacy (e.g., beliefs

that success will be followed by failure or that failure will be followed by success). Thus, the model predicts that stable attributions will be negatively correlated with large changes in expectancies for the future as compared with the present outcome. Positive correlations should occur for unstable causes.

Previous expectancies also affect attributions (Box 6 in Figure 1). Unexpected outcomes or outcomes which differ widely from the initial expectancy tend to be more attributed to unstable causes such as luck; expected outcomes are more attributed to stable causes (e.g., Feather, 1967; Feather & Simon, 1971 a, 1971 b; Valle & Frieze, 1976).

Finally, Valle and Frieze (1976) showed that attributions mediate expectancy change. Expectancies change less when unstable attributions are made.

Affect/Self Reward. Although feelings of pride or shame about the outcome are largely determined by whether it is a success or failure (Nicholls, 1975; Ruble, Parsons, & Ross, 1976), they are also mediated by the causal attribution made, according to the model (Box 5). Studies have shown that outcomes attributed to internal causes tend to maximize affective reactions (e.g., Reimer, 1975; Weiner, 1974). Thus, successes attributed to ability or effort produce more pride than those attributed to luck, the teacher or the ease of the task. Similarly, failures attributed to internal factors produce more shame. Effort attributions (which are internal and intentional) tend to produce especially high rewards (Nicholls, 1976; Weiner, Heckhausen, Meyer, & Cook, 1972; Weiner et al., in press). Effort is also most strongly associated with self-reward (Weiner et al., 1972).

ATTRIBUTIONS IN THE CLASSROOM

The conception of the attribution process described above was based largely upon laboratory studies where college students were made to succeed or fail at an achievement task and/or where only a small portion of the model was tested at one time. When attributional studies are done in less rigid settings, such as the classroom, several modifications of this theory may be necessary (see Frieze, 1976 a and b).

Defining the Event: Subjective Definitions of Success

In much achievement attribution research, subjects are told how a person (sometimes themselves) has performed on a task and then is asked to state why this person performed in this way. Sometimes this judgment is based on other information the subject is given and at other times solely on the outcome as it is defined and whatever background experiences and biases the subject brings to the situation. One of the difficulties with this approach is that defining an event as a success or failure is in fact a complex process that involves large individual differences. On a naive level, we know that a "B" grade on an exam might be considered successful for the "C" student and a failure for the "A" student. Thus, there may be wide individual differences in subjective definitions of success (Frieze, Note 1).

Typically, subjects have been told whether they should consider their performance a success or failure on the basis of (false) college student norms (e.g., Bar-Tal & Frieze, 1976). Even when such a procedure is used, subjects do not always accept this experimenter evaluation. In many cases, the experimenter is not aware of this since subjects are not asked to state subjective outcome. However, in a study which did

allow for this, Elig (Note 3) had to eliminate several subjects who saw themselves as failing when they should have labeled themselves as successes or visa versa. Although these cases accounted for less than 5% of his subjects, these were the extreme cases who were willing to actively discount the experimenter's instructions. Other subjects may have accepted the overall label but saw themselves as relatively high or low in their group.

Thus, defining a task as successful may well involve a process as complex as forming a causal attribution. Important determinants may include one's initial expectations, the known or assumed performance levels of the subjective evaluations of others, and perhaps even the causal attribution (Frieze, Note 1). Several papers have dealt with this issue in other contexts (e.g., Festinger, 1954). The present study assesses the importance of several of these cognitions as predictors of subjective success. In addition, the relative predictive value of both subjective success and objective performance level will be determined for theoretically predicted levels of affect, self-reward, and future expectations.

Causal Attributions for the Classroom

Although rarely discussed, it is generally implicitly assumed in most achievement attribution research that variations in causal explanations for success and failure are primarily the result of individual differences (see Bar-Tal & Frieze, 1977; Kukla, 1972; Weigers & Frieze, in press; Weiner & Potepan, 1970) and secondly due to differences in the outcome or other specific information about the situation such as how others have done or how one has done in the past (e.g., Feather, 1967; Frieze & Weiner, 1971; Miller, 1976; Miller & Ross, 1975; Weiner et al., 1971). Often causal

explanations are limited to ability, effort, luck and task difficulty, the four causes discussed by Weiner et al. (1971).

As discussed earlier, college students use a wide variety of causal attributions in explaining the causes of success and failure (Elig & Frieze, 1975). When the situation involves nonacademic settings, the list grows even longer (e.g., Birnberg, Frieze, & Shields, in press; Elig & Frieze, 1975; McHugh, Duquin, & Frieze, in press). Not only do the actual causes used vary by situation, but also there are differences across situations in the frequency with which different causal explanations are employed (Snyder & Frieze, Note 4).

Research specifically dealing with classroom attributions has shown that academic successes and failures are attributed primarily to effort or lack of effort. Frieze (1976 b) found that college students cited effort 84% of the time as the primary cause of success on an exam and 75% of the time as the major cause of failure in a simulation study using an open-ended method of assessing causal attributions. Frieze and Snyder (Note 5) report similar results in an open-ended study with children. In making attributions about a testing situation, 62% of the children cited effort as the major cause of success or failure. Thus, in terms of spontaneous reactions to open-ended questions, students of all ages tend to cite effort as the major causal factor in school achievement.

Although the high use of effort attributions occurs with open-ended data, this is not always the case when other measures of attributions are used. Researchers have tended to use a variety of techniques for assessing attributions. These include having subjects sum a variety of causes to equal 100%. A second, more common

method is to have subjects independently rate various potential causes for how much each contributed to the outcome. Finally, as mentioned earlier, subjects can simply be asked to state why a particular event occurred and this open-ended data can be coded through some procedure such as that outlined by Elig and Frieze (1975). Each of these methods has strengths and weaknesses (see Elig, Note 3; or Frieze, Note 1). This study will employ both open-ended attributions and ratings of various causal factors found to be important in earlier studies of achievement situations. The two methods are compared in this study.

Other research has already shown that effort is not used to such a great extent in attributing exam performances when rating scales are used. Bailey, Helm and Gladstone (1975) asked students to choose the major cause from a list containing ability, effort, luck and task ease as possible causal factors. They found high use of all of these causes except luck. Also, Miller (1976) found in a laboratory study that high involvement in the task led to greater use of ability and task attributions. Certainly most college students would be likely to feel that a course exam was important to them and therefore we might expect relatively more use of ability and task attributions for rating scale data. Therefore, we would expect the highest use of effort with open-ended responses.

Theoretical Predictions of the Attribution Model

Just as causal attributions may be affected by the type of situation, the predicted effects of causal attributions upon future expectancies and affect may also differ from these found in laboratory situations. The classroom is a complex environment with many variables which might potentially influence expectancies and affect. For

example, Bailey et al. (1975) found that affect was most related to outcome with those who did well feeling good and those who did poorly feeling bad. However, they further found that luck attributions produced the most happiness or upset. This contradicts the theoretically predicted relationship between internal attributions and affect. Similar relationships between affect and violations of expectations (typically attributed to luck) were reported by House and Perney (1974). They reported that subjects were most satisfied with unexpected successes and most dissatisfied with unexpected failures. Thus, expectancies may also effect affect in a real life situation. However, these results are somewhat confusing because of variations in measures of affect used. Both studies relied on a more generalized good or bad feeling rather than specifically on ratings of pride or shame. Weiner, Russell and Lerman (in press) have shown that different verbal affect labels may have very different attributional consequences.

Expectancies may also differ from those predicted in the attribution model. Although Simon and Feather (1973) found that unexpected outcomes in an exam situation were more attributed to unstable causes as predicted, they also found that task attributions were higher for unexpected outcomes. Also, Bailey et al. (1975) reported that regardless of their causal attribution, all students expected to do better in the future. They saw this as learning the cultural belief that improvement is always possible.

The theoretical relationships will be tested in this real life situation to see if they work in the ways predicted. In addition, exploratory analyses are done to see how other variables interact with expectancies, affect and attributions.

STUDY AND HYPOTHESES

Although there is a well developed theoretical model relating initial expectancies, attributions, affect and future expectancies, this model has not been tested in an actual classroom situation. In order to do this, the cognitions of college students were assessed before and after an important examination in a college course. The following predictions were made:

Causal Attributions

1. Students will cite effort as the major causal factor for their exam performance when asked an open-ended question.

2. Rating scale and open-ended methods of assessing causal attributions will be compared in exploratory analyses.

Subjective Success

3. Subjective success will be positively correlated with objective performance but the two variables will relate differently to the attribution process.

The following hypotheses were predicted by the theory reviewed earlier. In addition to these formal tests of theory in a real life situation, exploratory regression analyses were done to better determine interrelationships between attribution variables.

Expectancies

4. Differences between the actual score and the expectancy for the future will be positively correlated with unstable attributions and negatively correlated with stable attributions.

5. Differences between the actual score and the initial expectancy before taking the exam will be positively correlated with unstable attributions and negatively cor-

related with stable attributions.

6. Differences between the initial expectancy before taking the exam and the expectancy for the future after the exam will be positively correlated with stable attributions and negatively correlated with unstable attributions.

Affect/Self-Reward

7. Self rated affect will be positively correlated with internal attributions, especially with effort attributions.

8. Self-reward will be positively correlated with effort attributions.

METHOD

Subjects

Participants were volunteers from an evening college course in introductory social psychology taught by one of the experimenters. Thirty five students agreed to participate. Thirty of the students were white and five were black. Their median age was 21-25. 23% were younger and 33% were older than this 21 to 25 range. 19 were male and 16 were female.

Subjects took a 36-item multiple choice exam worth 33% of their grade.

Procedure

The study was introduced as involving attitudes towards tests. Participants were assured that their responses would be anonymous and would have no bearing on their course grade. There were three short questionnaires to be completed: one pre-test, one post-test but before the student knew the test score, and the third after the individual test scores and the class distribution of scores were returned.

The pre-test measures were: pre-test expectancy (number out of 36 you expect

to get right); subjective success standard (number right needed to consider performance a success); importance of getting a good grade to self, parents, teacher, friends, spouse, employer (7-point scales from very important to not at all important, plus "not applicable" or "don't know" category); confidence in pre-test expectancy (7-point scale); satisfaction minimum (lowest score you would feel satisfied with); comparative ability (relative to others in class, amount of ability you have for material in course); comparative effort (relative to others in class, amount of effort in preparing).

After completing the pre-test questionnaire, students put the questionnaire into an envelope kept at their desks and took the exam. As students finished, their exams were collected for scoring and they completed the short post-test questionnaire. The subjects were asked their post-test expectancy (number you think you got right) and their confidence in the post-test expectancy (7-point scale).

The third questionnaire was distributed after actual test scores were returned. The measures were: number of items correct, whether score was considered a success or not a success; degree of success (7-point scale). Following were two sets of attribution measures; first, an open-ended causal attribution for their test performance; and secondly, as a methodological comparison of causal measurement, a series of 7-point scales rating the difficulty of test, amount of effort in studying, ability for subject, quality of instructor, and luckiness in tests.

Measures of predicted consequences of attributions were: affective reaction to performance (7-point scale from "very proud" to "very ashamed"); self-reward or punishment deserved for score (9-point scale from "high reward" [+4] to "high punish-

ment" [-4] and an open-ended measure asking the reason for giving this reward or punishment; future expectancy for a (hypothetical) test next week covering the same material.

Students placed all three questionnaires into an envelope which was collected, and the purposes and hypotheses of the study were discussed and questions answered.

RESULTS AND DISCUSSION

Student Reactions to the Examination

Students on the average expected to get 29 items correct on a 36-item exam. This would have given them a "B" grade. The average score was 28 items, somewhat below their expectation of 29 or their average score of 30 which they stated they would need to feel they were successful. Thus, students did slightly poorer than they expected or wanted to do. When asked how they would do on another test based on the same subject matter, they raised their average expectancies to 32. This was even higher than their initial expectancy. These students, like Bailey et al.'s subjects, were apparently not discouraged by doing more poorly than they expected on the exam. As suggested by Miller and Ross (1975), they seemed to expect success and were undaunted by relative failure. They also reported feeling more pride than shame (4.7 on a 7-point scale) and gave themselves a moderate amount of self-reward for their performances on the average (6.2 on a 9-point scale).

Causal Explanations of Exam Performance

When asked about the cause of their exam performance after receiving their score, the majority (69%) attributed their outcome to effort. Other causal attribu-

tions used in response to the open-ended causal question were ability (20%), the difficulty or ease of the exam (9%), and interest in the material (3%). These results are very similar to open-ended data from children and may suggest that the academic environment itself teaches students to view their school performances as due primarily to effort and secondarily to ability (Frieze & Snyder, Note 4).

Rating scale data revealed a very different causal pattern as shown in Table 2. The instructor was rated highest and luck lowest. Ability and effort were highly rated with people who scored high on the exam being especially likely to believe they had high ability ($t_{33} = 3.62$; $p < .001$). There was also a slight trend for those who rated themselves as doing well on the exam (subjective success) to see themselves as luckier ($t_{33} = 1.85$; $p < .10$).

Although the rating scales were used directly in other analyses, open-ended attributions were coded into the three dimensions of internality, stability and intentionality so that correlations could be done.

Subjective and Objective Performance Levels

When correlations were done between the student's actual scores and their subjective ratings of how successful they were, the correlation was only .48. Although this is clearly significant ($p < .01$), it also suggests that these subjective evaluations are influenced by a variety of other factors in addition to actual outcome.

In order to more fully explore the relationship between subjective and objective success, a series of stepwise multiple regressions were done. Looking first at the variables impinging upon the subject before he is told his exam score, it can be seen in Table 3 that variables predicting subjective outcome and objective outcome (actual

score) were somewhat similar. Subjects who did not feel their grade was important to the instructor and who had high personal standards for the score they considered a success tended to score higher on both outcome measures. Those who did well on the exam also had high expectations for their score before the exam and after they had finished it (but before they knew their grade), and they did not feel their employer wanted them to do well. Those who saw themselves as doing well independent of their actual score were confident about their expectancy estimates and did not feel their doing well was important to either their parents or friends.

Aside from suggesting that subjective evaluations of outcome are indeed different psychologically from the actual performance levels; these data also demonstrate the importance of subject's perceptions of other's expectations for him or her. Such variables have not been studied in the attribution literature but they appear to deserve more attention. Also, it was interesting to note that the subjects' rating of how important doing well was to himself or herself did not directly influence either outcome measure. Much has been written about making students feel school is important but apparently for this college class such differences were not an important distinction between students. However, this lack of result may also represent a ceiling effect since 69% of the students felt that doing well was very important for themselves (7 on a 7-point scale).

The predictors of subjective evaluation of performance were further explored with stepwise multiple regression equations which allowed all variables as potential predictors as shown in Table 4. As can be seen, people who rated their performances most successful also felt more pride, felt they were luckier, felt the task was harder,

made a more external open-ended attribution, thought the instructor was good, and felt that the instructor wanted them to do well. They were also older. It was interesting that actual score came into the equation as the 10th predictor and explained only 2% additional variance.

When similar regression analyses were done for actual score, the predictors were very different. People who got higher scores expected to do better, did not feel their doing well was important to the instructor or their spouse, felt they had ability and used stable open-ended attributions and had high standards for success.

These two exploratory analyses may suggest that subjective success is far more important in predicting affective reactions than objective success. Actual scores were related to various attributions in such a way as to suggest a high general confidence. Subjective success was more related to a kind of affective reaction and a feeling of having done well on a difficult task.

Expectancies

A number of expectancy correlations were predicted by the theoretical model. Since Hypotheses 4, 5 and 6 refer to difference scores, such differences were computed and then the absolute values of the difference scores were correlated with attributions. Results are shown in Table 6. As can be seen, the open-ended stability ratings best supported the theoretical model. In all cases, open-ended stability correlated in the predicted direction. Overall, 9 correlations out of 16 were in the predicted directions although many of them did not reach statistical significance. In general, stable attributions better fit predictions than unstable ones. Thus, stable attributions tended to be more related to little change in future expectations as com-

pared with the exam score, and small differences between initial expectations and actual score. Those who used the unstable attributions of effort and luck showed the least change in their expectancies from before the exam to predictions for the future.

Overall, these results give only limited support for the attribution model of expectancy changes being mediated by the stability of the causal attribution.

As an exploratory analysis, correlations of these expectancy change scores with other variables were done. In terms of overall expectancy changes, males ($r = .34$; $p < .05$) and younger subjects ($r = .32$; $p < .05$) showed the most changes. Also, students who felt their doing well was important to their parents ($r = .33$; $p < .05$) and who did not personally feel that their doing well on the exam was particularly important ($r = .36$; $p < .05$) showed more changes. Perhaps the older students and the students who were highly concerned about doing well had more strongly developed expectancies about their own performance level before the exam and were therefore less influenced by their score on this particular exam in thinking about their future performance levels.

In addition to expectancy change predictions, Valle and Frieze (1976) also found that stable attributions led to higher future expectations while unstable attributions were correlated with lower expectations. Parallel correlations for these data are also shown in Table 6. As can be seen, these predictions were more strongly supported, especially for stable attributions. Valle and Frieze also reported more support for predictions relating to stable attributions so this is consistent. Our data suggests, though, that high ratings of ability are most strongly related to high future expectations so that the theoretical predictions may need more refinement.

Affect and Self-Reward

Correlations were done with various attribution measures and affect and self-reward ratings. These are shown in Table 7. As predicted, both affect and self-reward were positively correlated with effort and ability ratings. Also consistent with other studies, doing well on the exam and rating oneself as successful were strongly correlated with affect and self-reward. However, contrary to prediction, the highest correlations were not for the intentional effort attribution, but rather for ability. People who felt they had more ability felt better and rewarded themselves more. This is contrary to many laboratory studies of reward behavior and affect (e.g., Weiner & Kukla, 1970), but it is consistent with more recent work dealing with evaluations in an on-going context (e.g., Nicholls, 1976). It may also suggest that people value their own abilities highly and feel good when their ability results in good performance.

Finally, although open-ended data was theoretically better for expectations, it did not match the theoretical predictions for affect and self-reward.

It was also interesting to note that affect and self-reward were more related to subjective appraisals of success than objective performance. This was seen earlier for the regressions with subjective success. Predictors for affect included subjective success, confidence in initial expectation, a high belief in one's ability and the difficulty of the test. Also, students who felt doing well was important to their parents felt more pride.

Self-reward was similarly related to subjective success but effort was a more important predictor than ability. Also, those who gave higher rewards to themselves

were more confident of their initial expectations, perhaps because these were lower than average. However, they had high standards for what they considered a success.

CONCLUSIONS

Results showed that the theoretical attribution model was generally supported but that several differences were also found. When asked through an open-ended question about the cause of their performance, nearly all students saw their performance as primarily the result of effort; few cited task ease or difficulty and there were no luck attributions.

Expectancy changes were mediated somewhat by the stability of causal attributions, especially when open-ended data were considered, but this aspect of the model was not as well supported as Weiner et al. (in press) has suggested. Better supported were the direct effects of the stability of the attribution upon future expectancies.

Pride and self-reward were strongly related to internal attributions but not as strongly to intentional causes as had been predicted. Predictions with open-ended data were especially weak. Recent work by Weiner et al. (in press) suggests that various types of affect are differentially associated with causal attributions. They found that pride was most related to ability while shame was associated with lack of effort. Since our measure had pride and shame as endpoints, we were not able to separate these. Future research is needed to more fully understand various forms of affect. Weiner et al. suggest that some important affect measures might include pleasure, feeling good, feeling delighted, panic, feeling humble, feeling scared, guilty or sorry.

These results also suggest a far more complex model of attributions in the classroom than we had originally expected. As shown in Figure 2, we must also con-

sider how initial expectations are formed, how important the exam is to the person and others and how the student decides if a given performance is a success or failure. Additionally, the effects of attributions upon various types of affect must be considered. All of these are cognitions of the student. Other research might also analyze the real environmental variables such as subject matter differences and teacher variables.

In addition it is clear that subjective appraisals of success are very different from objective scores. These need to be more fully differentiated in the literature.

Although we are still in the process of building a model to explain attributions of students in the classroom, this data suggests areas that teachers might want to pay particular attention to. For example, what determines how good a student feels about an an exam score? Are all students similar in how they react or do we need different models for different students? When do students really expect to do better? How do peers and parent and teacher attitudes about school achievement influence attributions, pride and self-reward?

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TABLE 1

A Three Dimensional Model for Classifying Causal Attributions for the Success and Failure of Others

(Modified from Elig and Frieze, 1975)

	INTERNAL	
	Stable	Unstable
Intentional	Stable effort of actor (diligence or laziness)	Unstable effort of actor (trying or not trying hard)
Unintentional	Ability of actor Knowledge or background of actor Personality of actor	Fatigue of actor Mood of actor

	EXTERNAL	
	Stable	Unstable
Intentional	Others always help or interfere	Others help or interfere with this event
Unintentional	Task difficulty or ease Personality of others	Task difficulty or ease (task changes) Luck or unique circumstances Others accidentally help or interfere

TABLE 2

Causal Attribution Ratings

Attribution[1]	Overall	Objective Outcome		Subjective Outcome	
		Low	High	Low	High
Ability (How good are you in this subject?)	4.83	4.06	5.47[2]	4.47	5.10
Effort (How hard did you study for this test?)	4.43	4.44	4.42	4.13	4.65
Luck (How lucky are you in taking tests like this?)	3.37	3.25	3.47	2.80[3]	3.80
Task (How hard was this test?)	3.97	4.19	3.79	4.13	3.85
Instructor (How good was the instructor in this course?)	6.09	5.81	6.32	6.07	6.10

[1]All attributions rated on 7-point scales. High scores indicate more ability, effort, and luck, a harder test and a better instructor.

[2]$p < .001$ for a t-test between low and high groups.

[3]$p < .10$ for a t-test between low and high groups (2 tailed).

TABLE 3

Multiple Regression Predictors of Outcome Variables

(Prescore Variables Only)

Subjective Outcome	B Sign	Multiple R	Actual Score	R Sign	Multiple R
1. Confidence in post-test expectation	+	.47	1. Initial expectancy	+	.61
2. Perceived importance to instructor	-	.60	2. Perceived importance to instructor	-	.69
3. Personal standard of success	-	.62	3. Personal standard of success	+	.73
4. Perceived importance to parent	-	.63	4. Score expected after exam[1]	+	.78
5. Perceived importance to friend	-	.64	5. Perceived importance to employer	-	.80

[1]Once this variable is added to the equation, the beta sign for the initial expectancy becomes negative.

TABLE 4

Multiple Regression Predictors of

Subjective Outcome

(All Variables)

Variable	Beta Sign	Multiple R
1. Affect	+	.64
2. Luck	+	.71
3. Task difficulty	+	.75
4. Open-ended internality	-	.78
5. Instructor	+	.81
6. Perceived importance to instructor	+	.84
7. Age	+	.86

TABLE 5

Multiple Regression Predictors of Actual Score

(All Variables)

	Beta Sign	Multiple R
1. Initial expected score	+	.61
2. Perceived importance to instructor	-	.69
3. Ability	+	.76
4. Personal standards for success	+	.82
5. Open-ended stability	+	.84
6. Perceived importance to spouse	-	.87
7. Expected score after exam but before knowing grade[1]	+	.90

[1]When this variable was entered, the sign for initial expected score became positive.

TABLE 6

Correlations of Attributions and Expectancy Measures

Attribution	Expectancy Changes /Future Expectation -Score/[2]	Expectancy Changes /Initial Expectation -Score/	Expectancy Changes /Future Expectation -Initial Expectation/	Expectancy Future Expectation
Stable				
Ability	-.05	-.02	-.10	+.49**
Instructor	+.05	-.17	-.09	+.26(*)
Task difficulty[1]	-	-.07	-	-
Open ended stability	-.18	-.26(*)	+.15	+.19
Predicted sign	-	-	+	+
Uncertain Stability				
Task difficulty[1]	-.04	-	+.02	-.06
Open ended internality	+.05	.00	+.37*	-.07
Open ended intentionality	+.08	-.01	+.29*	+.10
Predicted relationship	0	0	0	0
Unstable				
Effort	-.18	-.23	-.28*	-.08
Luck	-.27(*)	.00	-.14	-.18
Predicted sign	+	+	-	-

[1]Coded as uncertain for future expectancies since the difficulty of a future test was unspecified.

(*) = $p < .10$; * = $p < .05$; ** = $p < .01$

[2]All expectancy difference scores are absolute values.

TABLE 7

Correlations of Affect and Self-Reward

With Attribution Measures

	Pride/Shame	Self-Reward
ATTRIBUTIONS		
Internal-Intentional		
Effort	+.32*	+.36*
Open ended intentionality	-.25(*)	-.27(*)
Predicted correlation	++	++
Other Internal		
Ability	+.45**	+.39**
Open ended internality	-.09	-.20
Predicted correlation	+	+
External		
Luck	+.02	-.02
Task	+.15	-.15
Instructor	+.05	+.10
Predicted correlation	- or 0	- or 0
Other		
Open ended stability	+ 28*	+.05
Degree of subjective success	+.58**	+.51**
Actual score	+.44**	+.37*

(*) = $p < .10$; * = $p < .05$; ** = $p < .01$.

TABLE 8

Multiple Regression Predictors of

Affect and Self-Reward

AFFECT			SELF-REWARD		
Variable	Beta Sign	Multiple R	Variable	Beta Sign	Multiple R
1. Subjective success	+	.64	1. Subjective success	+	.50
2. Confidence in pre-test expectation	+	.70	2. Effort	+	.58
3. Task difficulty	+	.76	3. Perceived importance to employer	-	.63
4. Ability	+	.79	4. Confidence in initial expectation	+	.67
5. Subjective success or failure judgment	-	.81	5. Initial expectation	-	.72
6. Open-ended intentionality	-	.83	6. Ability	+	.75
7. Perceived importance to parent	+	.85	7. Personal success standards	+	.78
8. Expected score after exam before score is known	+	.87	8. Perceived importance to instructor	+	.80

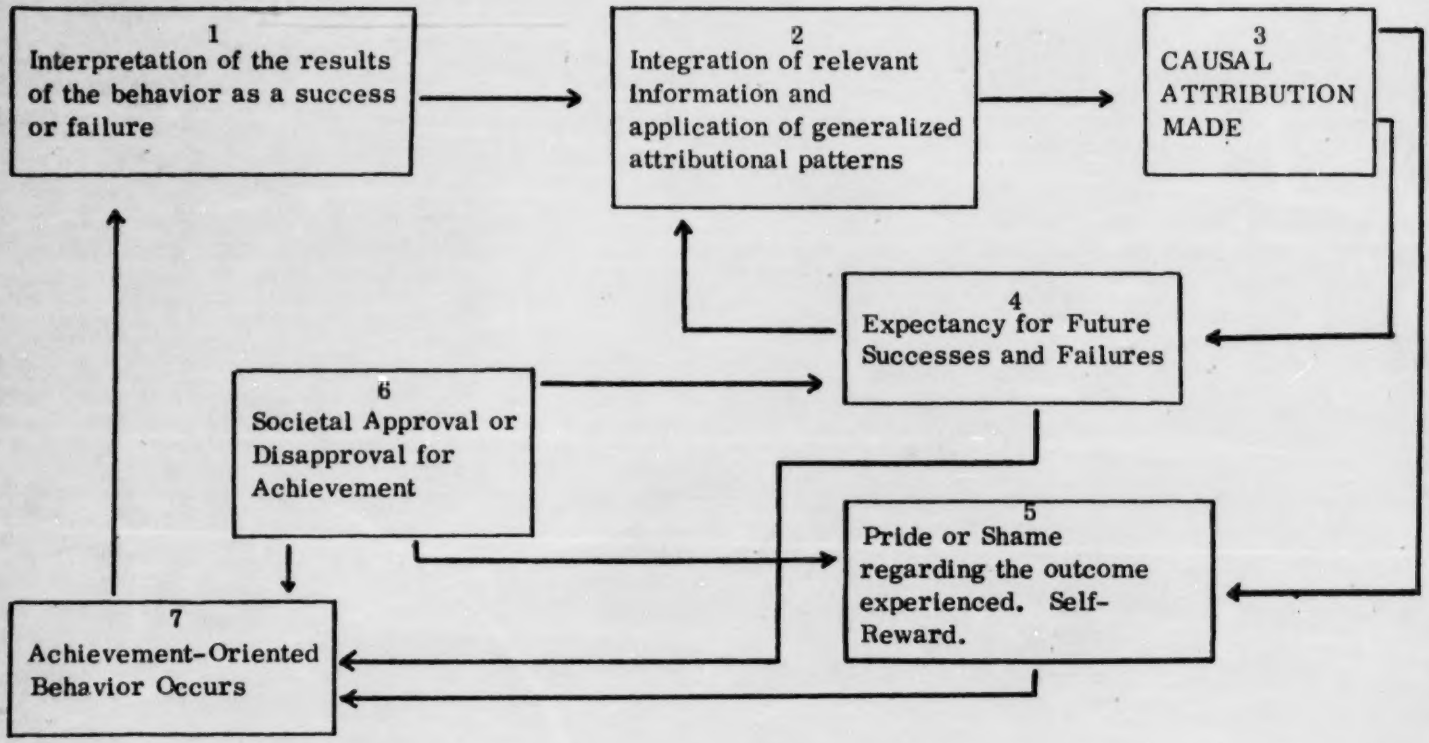

FIGURE 1. The self attributional process for achievement events. (Modified from Frieze, 1975.)

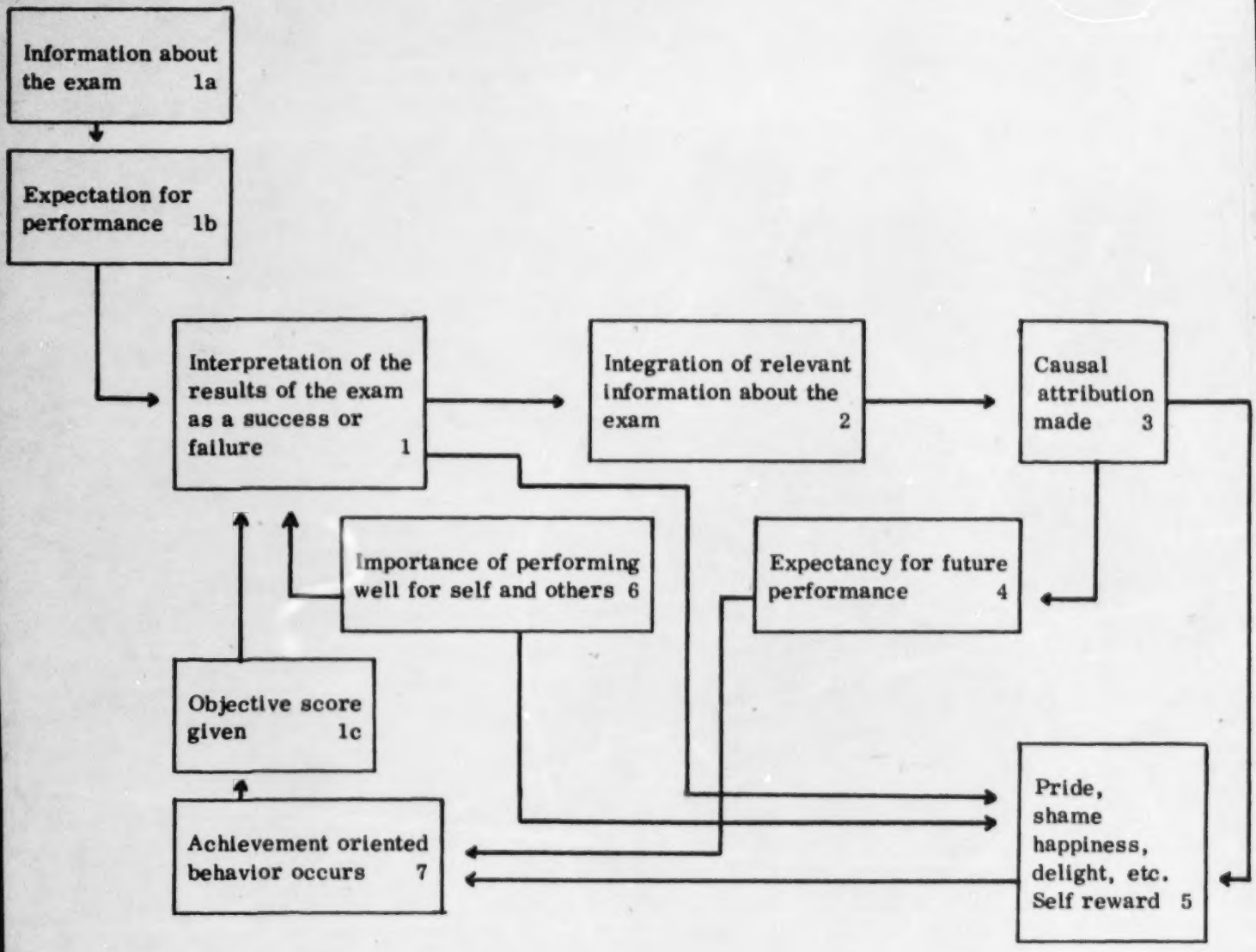
Information about the exam 1a
Expectation for performance 1b
Interpretation of the results of the exam as a success or failure 1
Integration of relevant information about the exam 2
Causal attribution made 3
Importance of performing well for self and others 6
Expectancy for future performance 4
Objective score given 1c
Achievement oriented behavior occurs 7
Pride, shame happiness, delight, etc. Self reward 5

FIGURE 2: A revised model of the attribution process in the classroom.

APPENDIX

APPENDIX A

ATTITUDES TOWARDS TESTS
(Part 1)

Please answer the following questions as best you can, even if you are not entirely sure of your response. Please be as honest as possible in your responses, since this is part of a larger study which will be used to help people to acquire effective test-taking attitudes. Your answers will be confidential and will not affect your grade; these questionnaires will not be looked at until after final grades are in. Thank you for your contribution.

There will be some questions to fill out before taking the test and some others to fill out later in the evening after finishing the test and getting your score.

1. How many questions out of 36 do you realistically expect to get right? _____

2. How many questions would you have to get right for you to consider your performance a success? _____

3. How important is it to each of the following people for you to get a good grade on this test? (Circle the appropriate number.)

	Very Important						Not at All Important	Don't Know or Not Applicable
yourself	7	6	5	4	3	2	1	0
your parents	7	6	5	4	3	2	1	0
your teacher	7	6	5	4	3	2	1	0
your friends	7	6	5	4	3	2	1	0
your spouse	7	6	5	4	3	2	1	0
your employer	7	6	5	4	3	2	1	0

4. How confident are you that you will get at least as many questions right as you expect?

(Extremely Confident) 7 6 5 4 3 2 1 (Not at All Confident)

5. What is the lowest score out of 36 you would feel satisfied with? _____

ATTITUDES TOWARDS TESTS

(Part 2)

1. How many questions out of 36 do you think you got right? _____

2. How confident are you that you got at least that many right? _____

(Not at all confident) 1 2 3 4 5 6 7 (Extremely confident)

ATTITUDES TOWARDS TESTS

(Part 3)

1. How many questions did you get right? _____

2. Do you consider this a success or a failure? (Check one.)

_____ Success: If success, is it:

(Extreme success) 7 6 5 4 3 2 1 (Not much of a success)

_____ Failure: If failure, is it:

(Extreme failure) 1 2 3 4 5 6 7 (Not much of a failure)

3. Why do you think you got this many right?

4. How hard was this test?

(Very hard) 7 6 5 4 3 2 1 (Not hard at all)

5. How hard did you study for this test?

(Studied very hard) 7 6 5 4 3 2 1 (Didn't study at all)

6. How good are you in this subject?

(Not good at all) 1 2 3 4 5 6 7 (Very good)

7. How good was the instructor in this course?

(Very good) 7 6 5 4 3 2 1 (Not good at all)

8. How lucky are you in taking tests like this?

(Not at all lucky) 1 2 3 4 5 6 7 (Very lucky)

9. How do you feel about your performance on the test?

(Very ashamed) 1 2 3 4 5 6 7 (Very proud)

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10. (a) How much reward or punishment do you feel you deserve for getting this many right?

(High reward) 4 3 2 1 0 -1 -2 -3 -4 (High punishment)

(b) Why would you give yourself this reward or punishment?

11. How well would you expect to do on an exam like this one (covering the same material) next week? How many would you expect to get right?

Age

Under 21 ____
21-25 ____
26-30 ____
31-35 ____
36-40 ____
41-45 ____
46-50 ____
51-55 ____
56-60 ____
Over 60 ____

Sex

Male ____
Female ____